Price One Shilling Net,
or 25 Cents.

February, 1913.

LIBRARY
RECEIVED
FEB 20 1913
U.S. Department of Agriculture.

THE VETERINARY JOURNAL

A Monthly Review of Veterinary Science.

Editors for Great Britain and Ireland:—

FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.,
FORMERLY PROFESSOR IN THE ROYAL VETERINARY COLLEGE, LONDON.

GEO. H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A.
PROFESSOR OF VETERINARY MEDICINE, PARASITOLOGY AND HYGIENE, IN THE ROYAL VETERINARY COLLEGE, LONDON.

Annual Subscription for the British Empire, 12s. Post Free; for the United States, $3.00.

LONDON.
BAILLIÈRE, TINDALL & COX,
8, HENRIETTA STREET, COVENT GARDEN.

AUSTRALIA AND NEW ZEALAND.
Messrs. GORDON & GOTCH, Ltd.,
Melbourne, Sydney, Wellington, &c.

NEW YORK:
W. R. JENKINS,
851 and 853, Sixth Avenue.

CHICAGO:
ALEXANDER EGER,
132, West Lake Street.

Entered as Second-Class Matter in the U.S. Post.

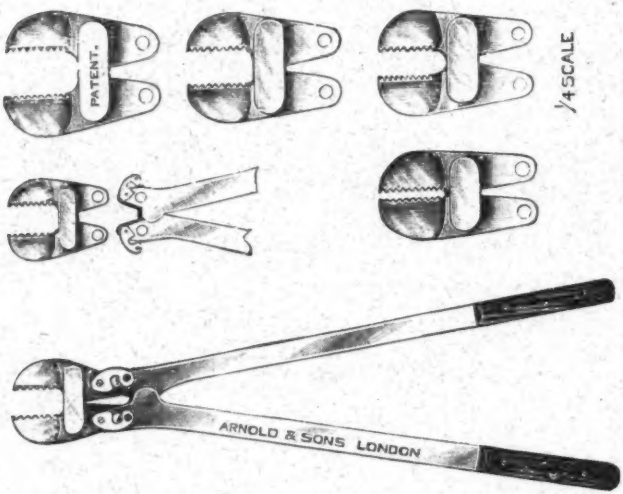
No. 452. VOL. 69.

"ARNOLD'S"

Patent Molar Tooth Cutter,

WITH REMOVABLE CUTTING BLADES
—— OF DIFFERENT WIDTHS. ——

The lightest, most powerful and reliable cutter ever brought before the notice of the profession.



PRICES.

With 1 Cutting Blade **£3 0 0**

Extra Blades, 17/6 each.

With 4 Cutting Blades of different widths ... **£5 12 6**

ARNOLD & SONS,

Veterinary Instrument Manufacturers,

GILTSPUR STREET, LONDON, E.C.

Telegraphic Address:
INSTRUMENTS, LONDON.

Telephone Number:
City 5240 (3 lines).

CONTENTS.

PAGE

SIR STEWART STOCKMAN, M.R.C.V.S. 51

EDITORIALS—

The Veterinary Profession and the Public Services 52

The "Pure Milk" Bill and the Relative Responsibilities of Dairymen and Butchers 53

A Government Veterinary Research Institute 55

GENERAL ARTICLES—

The Pathology of Milk Fever.—A Plea for Further Investigation. By W. M. SCOTT, F.R.C.V.S. 56

Caprine Free Martins. By C. J. DAVIES 62

A Disease of Mules Simulating Glanders. By D. P. LAURENCE EDWARDS, M.R.C.V.S. 70

CLINICAL ARTICLES—

Urinary Calculi in a Cob. By G. MAYALL, M.R.C.V.S. 79

A Case of "Intussusception." By CAPTAIN A. F. DEACON, A.V.C. ... 80

Successful Treatment of Tetanus with Liquor Ferri Perchlor. Fort. B.P. By J. F. D. TUTT 80

Unusual Body in the Throat of a Heifer. By J. F. D. TUTT 81

A Congenital Deformity in a Heifer. By A. ERNEST WILLETT, M.R.C.V.S. 81

Foreign Body in the Hoof as the Result of an Accident. By FREDERICK HOBDAY, F.R.C.V.S. 82

Results of Autopsies on 125 Horses that Died of Colic in Berne. By DR. A. REINHARDT 83

CANINE CLINICALS—

Gastrotomy in a Bitch. By G. MAYALL, M.R.C.V.S. 84

Congenital Goitre in the Dog. By ANTON LOKEN 85

ABSTRACT AND REPORT—

Summary of the Report of the Departmental Committee on the Public Veterinary Services 86

Victoria Veterinary Benevolent Fund 87

REVIEWS 91

PERSONAL 95

TRANSLATIONS—

Initial Mesalliance, Telegony or Impregnation 96

Comprehensive Survey of Zeller's Cancer Treatment. By PROFESSOR DR. B. LEWIN... 96

A New Bandage in Section and Rupture of the Flexor Tendons. By BASS 97

LETTERS AND COMMUNICATIONS, &c. 98

BOOKS AND PERIODICALS, &c., RECEIVED 98

FOALING SEASON.

VACANCIES FOR AGENTS in unrepresented districts for the **Imperial Accident Insurance Co., Ltd.** Established 1878. Horses Insured against Death from Accident or Disease; Mares for Foaling and Loss of Foals; Hunters and Stallions Insured against Death or Disablement. Claims paid, £500,000. Address, AGENCY MANAGER, 17, Pall Mall East, London, S.W.

BAILLIERE, TINDALL & COX

Anatomical and Physiological Model of the Horse.

By G. A. BANHAM, F.R.C.V.S. For Veterinary Students and Lecturers. Half life-size, composed of Superposed Plates mounted on linen coloured to Nature, showing Veins, Arteries, Nerves, Muscles, Skeleton, and Internal Organs in juxtaposition. With explanatory text. Mounted on strong boards. When open measures 10 feet × 3 feet; when closed, 3 feet 6 inches × 1 foot 6 inches.

Price **25s.** net, packing boards and carriage 2s.

Anatomical and Physiological Model of the Cow.

By G. A. BANHAM, F.R.C.V.S. Specially arranged for Veterinary and Agricultural Classes. Half life-size.

Price **25s.** net, packing boards and carriage 2s.

Diseases of the Dog and their Treatment.

By Prof. G. MÜLLER, Director of the Clinic Veterinary High School, Dresden. Translated by A. GLASS, M.A., V.S. (M'Gill), Lecturer in Canine Pathology, University of Pennsylvania. Third Edition, revised and much enlarged. Pp. xviii. + 506, with 178 plain and coloured illustrations. Price **25s.** net, postage 7d.

Manual of Veterinary Physiology.

By Major-General F. SMITH, A.V.D., F.R.C.V.S., late Director-General, Army Veterinary Service; Examiner in Physiology, Royal College of Veterinary Surgeons. Fourth Edition. Pp. xii. + 808, with coloured plate and 260 illustrations. Price **18s.** net, postage 6d.

Veterinary Obstetrics:

Including the Diseases and Accidents Incidental to Pregnancy and Parturition. (FLEMING'S). Third Edition, revised and modified by J. F. CRAIG, M.A., M.R.C.V.S., Professor of Anatomy and Medicine, Royal Veterinary College of Ireland. Pp. viii. + 528, with 161 illustrations. Price **15s.** net, postage 5d.

Veterinary Toxicology.

By G. D. LANDER, D.Sc., F.I.C., Professor of Chemistry and Toxicology, Royal Veterinary College, London. Pp. xii. + 312, with 39 illustrations. Price **7s. 6d.** net, postage 4d.

The Economics of Feeding Horses.

By H. A. WOODRUFF, M.R.C.V.S., Professor of Veterinary Medicine and lately of Veterinary Hygiene and Dietetics in the Royal Veterinary College, London. Pp. x. + 118. Price **3s. 6d.** net, postage 3d.

BAILLIÈRE, TINDALL & COX,

8, HENRIETTA STREET, COVENT GARDEN, LONDON, W.C.

SIR STEWART STOCKMAN, M.R.C.V.S.

Chief Veterinary Officer to the Board of Agriculture and Fisheries.
Formerly Professor of Pathology and Bacteriology in the Royal (Dick) Veterinary College, Edinburgh; and afterwards Veterinary Adviser to the Transvaal Government.

THE

VETERINARY JOURNAL

FEBRUARY, 1913.

SIR STEWART STOCKMAN, M.R.C.V.S.

THAT Professor Stockman should be knighted at the present moment is an honour which the profession will welcome, both on account of the fact that the recipient is a deservedly popular man amongst his colleagues, and because it is an appreciation of the value of the services of the Veterinary side to the Department of Agriculture and Fisheries.

The recent scare caused by the appearance of foot-and-mouth disease in Great Britain has given the Board of Agriculture an opportunity to prove to all breeders of cattle the necessity for its existence, and, although sufficient time has not yet elapsed to be too sure that we are "quite out of the wood," yet the energetic manner in which it has been got under control is deserving of the highest praise. Born in 1869, Sir Stewart Stockman is a native of Edinburgh, and graduated with honours from the Royal (Dick) Veterinary College, where he became assistant to Professor (now Sir John) McFadyean in the Department of Pathology. In 1892, when this gentleman was appointed Principal of the London College, Mr. Stockman was selected as Professor of Pathology and Bacteriology, a position which he occupied until the Boer War, when he volunteered for South Africa, and was present in several engagements, receiving a medal and four clasps. He then went out to India under the Civil Veterinary Department, remaining, however, only twelve months before he was offered the position of Veterinary Adviser to the Transvaal Department of Agriculture, from which, two years later, he returned to England as Chief Veterinary Officer to the Board of Agriculture and Fisheries.

Of his work here the profession in England is well acquainted, and that the difficulties in the way of eradicating such plagues as glanders, swine fever, tuberculosis, anthrax, distemper, con-

tagious abortion, and many others out of the country may not be insurmountable is their wish. Whatever may happen, the veterinary and agricultural communities feel that they may with confidence rest assured that nothing will be left undone which is likely to promote their general welfare, and to protect the flocks and herds from the ravages of disease.

Editorials.

THE VETERINARY PROFESSION AND THE PUBLIC SERVICES.

On August 30 last a Committee, of the utmost importance to the members of the Veterinary profession, was appointed by the President of the Board of Agriculture and Fisheries "to inquire into the requirements of the Public Services with regard to the employment of officers possessing veterinary qualifications, and to consider whether any further measures can with advantage be adopted for the selection and training of students with a view to such employment."

This Committee examined a number of witnesses respectively chosen as representative of the Government services, the teaching colleges, the diploma-granting body, the Universities, the private practitioner, and the Colonies.

This examination was spread over several months, and the questions and answers will be published shortly in full, the conclusions arrived at being summarized on page 86 of this month's issue. The result was satisfactory in more ways than one, for it is the first time that the profession has been considered of sufficient importance to have its affairs inquired into and its efficiency for any sudden emergency granted.

When compared with the public services rendered to the State, and paid for by the State, in other countries, the Veterinary Public Health Official can scarcely be said to exist in England; and, in so far as research work is concerned, by far the major part of it is done by private enterprise and at private expense. Even the Colleges are miserably supported both in funds and in opportunites for work, and altogether it is time that something is done.

The future chances for a brilliant student have for a long time been marred in the majority of instances by the fact that as soon as the diploma was obtained he had to earn his daily bread, but by the institution of scholarships, both during the College career and for post-graduate study, this will be very greatly altered, and

men of the highest scientific attainments will be induced to join and work for the profession.

In the words of the summary of the findings of the Committee, "The number of suitable candidates for appointments in the public services is inadequate," and a further conclusion arrived at speaks promisingly for the future, as we read: "That a largely increased number of veterinary officers possessing special qualifications will be required for the Public Services."

Numerous scholarships are recommended for the student and for the newly-fledged graduate, and State aid is recommended for the teaching schools; and in this latter respect the Committee are wise, for it is utterly impossible for private institutions such as exist in Great Britain to compete, as at present constituted, either in laboratory or clinical research, with the great Government-aided veterinary schools of other European countries, and everyone amongst us knows, and has regretted at some time or other, that on account of the want of this pecuniary aid the English veterinary profession has often been compelled to act the part of a follower instead of giving a friendly lead to its *confrères* in other countries.

The Departmental Government inquiry will, if its recommendations are carried out, give a fresh lease of life to a profession whose ranks and pockets have lately been terribly thinned by the advent of motor traction and the consequent loss of tens of thousands of former patients. Our especial thanks must ever be due to the present President of the Board of Agriculture and Fisheries, Mr. Walter Runciman, for having instituted and carried out the inquiry.

THE "PURE MILK" BILL AND THE RELATIVE RESPONSIBILITIES OF DAIRYMEN AND BUTCHERS.

We are very glad to see that Mr. John Burns has reintroduced his Milk and Dairies Bill, and we sincerely hope that facilities will be given for it to be passed into law in the near future.

The main objects of the Bill are summarized in the Memorandum as follows: To provide for the more effective registration of dairies and dairymen; the inspection of dairies and the examination of cows therein; the prohibition of the supply of milk from a dairy where such a supply has caused or would be likely to cause infectious diseases, including tuberculosis; the prevention of the sale of tuberculous milk; the regulation of the importation of milk so as to prevent danger to public health arising

therefrom; the issue of regulations for securing the supply of pure and wholesome milk; the establishment by local authorities in populous places of milk depôts for the sale of milk specially prepared for infants.

Obviously it is directed in the main against the possible transmission of tuberculosis from cows to human beings, particularly infants, by means of milk, and one of its clauses especially provides for "the establishment by local authorities in populous places of milk depôts for the sale of milk especially prepared for infants." But why limit this provision to "populous places," which presumably applies to the larger towns and cities? Do not the infants of the villages and smaller towns require similar protection?

We are glad to see that attention is being directed to imported milk, for this is a growing branch of the industry, and as a possible source of danger to the public health must not be neglected.

In the Bill it is apparently recognized that the veterinary surgeon is the only person fitted by training and experience to examine cows, and if by any chance it should be considered that anything is lacking in this respect, no doubt it will be pointed out and remedies suggested by the Committee now inquiring into the question of the training of veterinary inspectors.

A very important paragraph says: "The Board of Agriculture and Fisheries propose to issue an Order under the Diseases of Animals Act, 1894, dealing with tuberculous cows, and providing for the payment of compensation in cases of slaughter by the local authority. The Treasury are prepared, subject to the assent of Parliament, to sanction the payment from the Exchequer of one-half of the net amount paid by way of compensation for a period of five years."

It appears therefore to be the intention of the authorities to compel the slaughter of cows yielding milk infected with tubercle bacilli, and certainly any other action would be absurd. We have often pointed out the absurdity of the limited powers at present possessed by some local authorities by which they can prohibit the sending of such milk into their districts, although they have no power to order the slaughter of the offending cow or cows. A farmer not desirous of submitting to the total loss of his cow by voluntarily slaughtering her may simply sell her in open market to continue her virus-spreading career in another district. Very few farmers will object to the slaughter of such cows if they are to receive some reasonable compensation, and such compensation should certainly be in the main a National and not a local charge. Moreover, it will result in an enormous

benefit to the farmers themselves who do not sufficiently realize the fact that tuberculosis of cows in the early and unsuspected stages is responsible for great fluctuations in milk yield and corresponding monetary loss.

We welcome this principle of compensation also as a matter of principle, for it must logically be followed by similar compensation to butchers and meat salesmen for carcases seized when the persons involved can prove that they had paid fair prices for wholesome animals and the diseased condition could not possibly have been detected until after slaughter. That butchers should be prosecuted and dairymen compensated for analogous offences would be quite Gilbertian were it not such a serious matter. In our opinion, only by the co-operation of dairymen and butchers with public health authorities can the success of this great scheme be assured, and these two branches of the food industry should be treated on similar lines. Notification of suspected animals or carcases should be encouraged by the offer of compensation and immunity from prosecution; but, on the other hand, any proved evasion or attempts at evasion of such responsibility should be met by severe penalties.

G. H. W.

A GOVERNMENT VETERINARY RESEARCH INSTITUTE.

We understand that Mr. Runciman, President of the Board of Agriculture and Fisheries, proposes shortly to submit a proposal to the Development Commissioners for the establishment of a research institution for the investigation of diseases of animals. This is a most important step in the right direction. Far too little has been done in the British Isles in this direction. Most of the investigations into animal diseases in this country have been done by private institutions, and in the few instances where Government assistance has been given advantage has had to be taken of private institutions for the purposes of investigation. This is not as it should be, and we trust that a research institute, creditable to the country, will be established, and that such salaries will be offered to the director and other principal workers as will ensure the best men being obtained for the posts.

General Articles.

THE PATHOLOGY OF MILK FEVER.—A PLEA FOR FURTHER INVESTIGATION.

By W. M. SCOTT, F.R.C.V.S.
Bridgwater.

For the great discovery of the principle of treatment which bears his name, the cattle-raising community owe Schmidt an everlasting debt of gratitude.

Not only has he given us a practically infallible cure for this bovine scourge, but as a clinician he has paved the way to the pathologist in his endeavour to demonstrate the *causa causans* of this disease. Has the latter succeeded? Up to the present it appears he has not. In short, therapeutically and clinically, we have made great progress; pathologically and scientifically we are little better than empirics. We know if we inject gas, air, or fluids into the mamma of a milk-fever subject we will get a restoration to a normal condition, but why we do so remains an uncertainty. We have here, in fact, another illustration of practice preceding science. In the pre-Schmidt days many theories were put forward, and of recent years some have been either modified or dropped altogether. When the oxygen treatment was adopted, the suggestion was made that the origin of the disease was a microbe in the udder, which could not live in the presence of oxygen (anaerobe). Others held that a bacillus of the coli group, and incubated in the uterus, was the actual cause. Of those who uphold the germ theory one must ask: how could a disease manifesting itself by grave functional derangements, subside as suddenly under suitable treatment as it appeared, and leave not the slightest vestige of organic trouble behind it? This is contrary to the most benign form of microbian invasion. Even where the nasal mucous membrane is invaded by the least harmful cocci or bacilli, commonly found in catarrh, and producing no constitutional disturbance, such an invasion may compel nature to supply a new mucosa to the nasal chamber and take a week to run its course. How much more, then, a microbic invasion of the sensitive milk tubules, forming in themselves an admirable incubator for the growth and development of the germs in

question and their secretion or excretion of a specific toxin capable of producing the gravest symptoms possible, and in many cases causing dissolution, and yet leave no organic complications behind! More reasonable is the milk toxin theory, and by those who hold this view it is supposed a specific poison is liberated in the udder itself, I presume while in the performance of its metabolic functions. I venture to suggest, in the light of our present-day experience, this theory leaves a great deal to be desired. Why should a perfectly healthy animal, with a perfectly normal udder, in its physiological processes manufacture a pathological by-product, *i.e.*, a toxin? Nay, more, the more healthy and robust an animal is, the more liable she is to milk fever, and *vice versâ*. Any condition which removes a milk fever subject from the normal healthy standard reduces the risk of her developing the disease to a minimum. I have noticed the retention of the placenta, mammitis, difficult parturition, eversion of the womb, and even premature birth, appear to act as preventatives to milk fever. Reasoning from analogy, one would say that if the cause of this disease is a toxin, the fact of the system being already lowered by disease or derangement, and the protective forces enfeebled, the toxin-producing cells would proportionately increase; but, as already stated, such is not the case.

Of course, one knows sometimes that normal physiological cells take on pathological functions, *viz.*, neoplasms; but in the milk fever patient there is not the slightest vestige of organic mammary trouble, nor does there appear to be a very excessive cell proliferation going on. Again, if a specific toxin has been formed in the udder, before the grave cerebral and constitutional disturbance can take place, absorption must result into the blood-stream, for no organ of the economy escapes this disturbance. It must, therefore, follow that if the cause is a toxin, inflation of the udder must act not only in the suppression of a further supply of toxin in the udder itself, but it must also neutralize the toxicity of the poison already absorbed and circulating freely in the blood. For the former condition the mechanical influence of pressure would be logically understood; for the latter, however, no chemical law can satisfactorily explain how air injected into the mamma can neutralize a toxin flowing in the blood, which is in itself capable of producing such grave constitutional

disturbance. What, then, is the active cause of milk fever? That there is a well-defined cause at work, considering the more or less constant nature of the symptoms, I think all will agree. From records of observations gathered from nearly a thousand cases, I have come to the conclusion that *primâ facie* it is a circulatory disturbance. In every case at the outset there is a high cardiac and arterial blood-pressure, and a probable increased tension in the peripheral arteries and veins. Of course, one must remember that this disease is the production of generations of artificial forcing on the part of the stockowner, in his endeavour to obtain the maximum of milk in the minimum of time. Moreover, the milchy strains are well preserved, forced, and bred from, so that it must follow that heredity plays an important part as a contributing cause of milk fever. And I opine the higher blood-pressure an offspring inherits from its progenitor, the greater the flow of milk, therefore, the higher the blood tension, the more prolific the cow as a milker will be, and the more predisposed to milk fever. This statement is rather borne out by the fact that the cow does not reach the stage of milking maturity until after the third calving. From this period onward there is an increased blood tension, and the greater the tension, the greater the susceptibility to milk fever.

Perhaps it would be well to review what actually takes place in the metabolism after parturition. During the last stages of pregnancy the most vascular organ in the whole animal economy in the gravid uterus, and nearly every organ of the body is depleted for its benefit, but the depletion is so gradual and progressive that no ill effects are noticeable. Not so, however, when after an easy delivery the womb no longer requiring its normal supply of blood, shrinks, and in its shrinking process expels the blood from its matrix. Every organ of the body up to now has had enough blood for its purpose, save the udder, which now becomes progressively active, and in the process of its activity an increased flow of blood is required. I believe if a normal standard of blood supply and demand is maintained in the udder from this period onward no milk fever will follow, and the flow of milk will not only be maintained, but gradually increased. If, on the other hand, the vasodilator and constrictor centres are so upset that the supply of blood going to the udder is in excess of its requirements, a hæmatic surfeit of the milk-

producing cells takes place, followed by a pronounced depression of their normal physiological functions and the consequent interference of the secretion of milk, leading to lactic inertia. The blood-producing cells of the body are still active and a general hyperæmia follows, particularly so in the udder. By this time all the secretive organs, more or less, are suffering from a surfeit, digestion is arrested, partial paralysis of the pneumogastric largely accounts for constipation of the bowels, the liver is engorged and congested, and this may partly account for, in severe cases, disturbance of its glycogenic functions; it is more than probable, however, considering the severe cerebral tension, that sugar in the urine is established by irritation of the floor of the fourth ventricle also. As already stated the suppression of milk is noticeable, and the same applies to the suppression of urine. With all these normal functions of the body disturbed, is it not feasible to suspect at this stage a generalized and systematic auto-intoxication is established? and in my opinion it is at this stage that intoxication takes place which is the effect and not the cause of the disease. Again, if milk fever is due to the production of a mammary toxin capable of producing the grave symptoms associated with milk fever, it must follow the said toxin chemically is very virulent in character, and it is only reasonable to suspect that milk coming from such an udder cannot fail also to become contaminated with the poison. This being so, one would expect to come in touch with cases where constitutional disturbance could be traced to the ingestion of toxic milk. It may be my misfortune, but I can say candidly I have never seen such a case. I have been called to cases where the animal was lying on her side absolutely comatozed, the four quarters of the udder completely exposed, and the delicate day or two old calf having completely sucked the udder dry without the slightest visible ill-effect. I have myself drunk the milk taken direct from a milk fever subject, and also given it to others, without ill-effect. I have kept young kittens on the milk taken from a milk fever subject and noted no constitutional disturbance. Of course, these simple facts may not, to the critical observer convince him of the non-toxicity of the milk; he may argue that the natural antidotal and protective constituents of the alimentary tract has a neutralizing effect upon the toxin. To clear this point I have, however, injected 50 c.c. of milk-fever

milk subcutaneously into a full-grown cat and noticed not the slightest ill-effect. If there is such a thing as a mammary toxin, I believe it is so insignificant in the production of milk fever as to be ignored, and if it is present at all, I opine it is the effect, and *not* the cause. I venture to think that a line of thought somewhat on the following basis will be tolerated by those practitioners who have taken the trouble to interpret the more constant symptoms of this disease. As already stated, there is a circulatory disturbance after parturition. Is this to be wondered at, considering the very vascular gravid uterus, the artificially vascular mammary gland, and the complex circulatory condition of the cow's brain, *i.e.*, *rete mirabile?* As the result of this disturbance, stimulation of the vasoconstrictor centres consequent upon the blood passing through them, the blood-pressure rapidly rises, due to increased heart-beat and contraction of the muscular coat of the systemic arteries; this means, in addition, distension of the left ventricle. It is probable that the original stimulation of the vasoconstrictor centres of the brain and spinal cord is due to an excess of venous blood passing through them. This may also account in the early stages for the hurried respiration one sees, and for the same reason the respiratory centre may be stimulated. This pressure rise will be kept up until the inhibitory or dilator centres are stimulated. The heart then beats more slowly. One must also remember that as the result of excessive work the overworked and overgorged left heart becomes exhausted and relaxed, the blood-pressure falls, and before death almost as low as the surrounding atmosphere; in fact, this is one cause for dissolution in milk fever. On the other hand, the blood-pressure may rise so high before the vasodilators can act that cerebral hæmorrhage takes place, in which case the practitioner is helpless, and cannot rouse his patient out of the comatose condition. This condition answers well to the term parturient apoplexy.

How does Mammary Injection Cure Milk Fever?

As digitalis quickens a slow heart and slows a quick heart, I believe injection of the mamma raises an abnormally low blood-pressure and lowers a high blood-pressure.

Primarily at the outset of this disease, as already stated, the blood-pressure is raised, and if the animal lives, secondarily, the

pressure is lowered. As already seen, the blood-pressure rises, one might say, almost mechanically, the vasoconstrictor and dilator centres are put out of gear, so to speak, owing to the plethora of blood from the womb caused by that organ shrinking. It must therefore follow if the womb did not shrink rapidly after calving no milk fever would follow, and, to my mind, this accounts for the fact that given a difficult calving one will get no milk fever; in short, a physiological parturition predisposes to milk fever, a pathological one prevents it. Injection of the udder produces another mechanical circulatory disturbance, and acts like the homœopathic dictum of *similia similibus curantur.*

That injection of the udder has a specific effect upon the circulation no one can deny who has taken the trouble to look into this point. I have taken the pulse at the heart during the excitable high blood tension stage, and registered 160 beats per minute; injected the udder and found in twelve minutes the pulse-beat drop to 83. In like manner during the comatose stage an imperceptible pulse will be, after injection, increased in volume and beats.

Some three years ago my attention was first directed to the *modus operandi* of mammary injection of a case we were treating in the comatose condition. We inflated the udder, got the cow on her breast, when slight indications of consciousness with visible corneal reflex was noticed. Suddenly she appeared to have a fit, rolled on to her side, eyes fixed, jaw locked, frothing from the lips, legs propped out, fixed and rigid, and head thrown back. The membranes became absolutely pale, and had it not been for this rigidity I would have diagnosed internal hæmorrhage. Artificial respiration was tried, but consciousness never returned; the voluntary muscles, however, relaxed, and the pink blood colour returned to the membranes. *Post-mortem* revealed profuse cerebral hæmorrhage. This was due no doubt to the sudden rise of blood-pressure in the brain, greater than the blood-vessels could tolerate consequent upon mammary injection.

I may add I have also had a case of enteric apoplexy, in my opinion due to the injections; while we have had several cases of hypostasis and congestion of the lungs, which I look upon not so much from mechanical inhalation of ingesta as from the effects of mammary injection. If it is possible by the injection of the mamma of air oxygen or oxygenated fluids to oxygenate

the blood, I submit we have another explanation of how udder injection acts upon milk fever. For, as already stated, it is the excessive volume of deoxydized blood which raises the blood-pressure at the outset, and, if this is true, the artificial oxygenation of the blood must facilitate a cure. In any case, for years past the routine practice we have adopted is a small injected volume of air followed up by a solution of pot. permang. and ac. boric, and finally air. The pot. permang. supplies the extra volume of oxygen; the ac. boric is the best antidote against streptococcic and staphylococcic infection, produced by artificial contamination while it appears to be well tolerated by the milk acini.

CAPRINE FREE MARTINS.*

By C. J. DAVIES.

During the last few years the importation of goats from abroad has been prohibited by the Board of Agriculture. The purity of the small herds of Swiss goats already established in these islands is jealously guarded, hence much inbreeding is being carried on among animals of this type.

Coincident, apparently, with this inbreeding is the birth of an ever-increasing number of kids with malformations of the genital system. Such kids are usually called "hermaphrodites" by goat breeders, irrespective of the precise nature of the peculiarity they possess. The introduction of a tendency to genital malformation seems to date back to the year 1897, when, according to a footnote in the last edition of the "Book of the Goat," three Toggenburg she-goats imported in kid by Mr. Paul Thomas gave birth to seven kids between them, one kid from each goat being a hermaphrodite. It is understood that the normal brothers and sisters of these kids were bred from and figure (sometimes in several lines) in the back part of the pedigrees of many modern goats, and the inference is that normal goats, nearly related to malformed animals, transmit the peculiarity to a proportion of their progeny—more especially when gross inbreeding is practised.

It is, of course, difficult to get from breeders an admission that a living animal is litter brother or sister to a malformed kid,

* All rights reserved.

but at least one goat at present at stud is known to come within this category; another well-known animal figures as the sire or grand-sire of a large number of recently born hermaphrodites; and a third celebrated he-goat is acknowledged to have got a large number of abnormal kids during his career, it being stated that one season *every* kid he sired, eleven in number, was a hermaphrodite. One she-goat at present living has already had two malformed kids by different sires, and a number of she-goats are known to have had at least one hermaphrodite during their career.

Inquiries made among Swiss veterinary surgeons have elicited the fact that the phenomenon "is by no means uncommon among goats" in that country, indeed one writer implies that it is more frequent in goats than in other animals, and suggests that "close inbreeding often plays an important part with regard to it. There appear, however, to be other factors which have not been cleared up which are to be blamed for it."

English goat breeders seem to think that malformed kids are not more common in one breed than another. It is a curious fact, however, that the writer has not, during a recent investigation, been able to hear of one case among animals with Nubian blood. The great majority of examples occur among pure Toggenburgs, the remainder being among what are called Swiss or Anglo-Swiss goats, usually when there is some Toggenburg blood in the pedigree. This may, of course, be only coincidence.

Allusion has often been made in various periodicals to a similar class of phenomenon which results in cattle and sheep in the production of an animal known to farmers by the curious name of "free martin." In this animal the internal organs are male, but as the accessory organs are female it passes for a creature of this sex until the suspicions of its owner are aroused by its absolute sterility, combined with a somewhat masculine appearance. It appears to be well established that in cattle free martins always come as twin to a normal bull calf. A cow may have twin bulls, both of which are normal and fertile, or twin heifers of which the same may be said, but if the twins are of apparently different sexes it is extremely likely, though not invariably the case, that the supposed female will be a free martin. According to a Swiss correspondent the unfruitful animal occurs in 70 per cent. of cases.

It is difficult to get any reliable information as to the probable

number of kids born with malformed genital organs, but this year among the total births of kids eligible for entry in the Herd Book it is believed that at least 2 per cent. belonged to the class under discussion—and the proportion is possibly much greater. One breeder of Toggenburgs expects to get "one or two bred every year"; another has bred two this year; a third has had "none at all lately, but at one time had several from Toggenburgs"; and so on.

In one respect goats differ totally from cattle, for malformed kids have recently come (*a*) singly, (*b*) as twin with a normal male, (*c*) as twin with a normal female, (*d*) as one of triplets the normal kids being male and female, (*e*) as one of triplets the normal kids being both males. Breeders are unanimous in asserting that in their experience two malformed kids have never been born at the same birth.

Although, as already remarked, goat breeders seem to call all kids with malformation of the genital organs hermaphrodites, there seems to be considerable variation in the precise peculiarity of each animal born. One breeder says that four have been born in the herd all different; another in reporting the recent birth of one describes it as "different to others."

The following descriptions were recently received of malformed Toggenburg kids: "It was a very large well-formed kid —one of *three* at a birth—the other two being both males. . . . It had the appearance of being a male kid until it was closely examined, having no sign of the vulva of the female goat, but on the other hand there appeared to be no orifice of any kind on the under part of the body, and there was, as far as we could make out, no outlet for the urine at all. There was a peculiar formation of the scrotum, which had the appearance of raw flesh, having no outside skin or hairy growth like the other two kids had, and being moist to the touch, as if the urine might escape there, though we thought that was hardly possible. . . . I had another case of a hermaphrodite some time ago, and that was a *single* kid, and had the outward sign of being a female. She was *also* a very fine, large kid, having the sheath or orifice of the male, *as well as* the vulva of a female."

A third kid from the same breeder was undoubtedly a male, but the orifice terminated between the teats instead of being carried forward, and no scrotum was observed.

What one breeder describes as the "distinctive organ" of the caprine free martin is the glans of the penis visible at the external orifice. According to details received this varies in size, and may be so small as to be practically unnoticeable, or of such a size as to be obvious throughout life. In one case the breeder had the very small rudiment removed from the kid, hoping in this way "to accentuate the female characteristics as they developed. But it was all to no avail. The goat grew enormously, though apparently a female she was a male in size, and in due course even developed, and very strongly, the characteristic smell of the male goat."

Free martin goats are said by one breeder of experience "invariably to have an appearance in head and size masculine, and the body (except for size) feminine in appearance." Very often the kid is effeminate looking in early life, and only develops a strongly masculine appearance as it nears the end of its second year.

The following particulars of living or recently bred free martins have been received from their owners:—

(1) Fawn and white hornless pedigree Toggenburg, born 1909, twin to a normal male, height 33 in. This goat, used as a chaise goat, is larger than a female but not so large as a large male, is more male than female in appearance, has the bearing and confidence of a male, is not timid, has no smell at any time like the male goat. At the beginning of the breeding season (October and November) worries the female goats with attentions like a male would. To the casual observer she is formed like a female, but there is a difference, she is fuller behind. She has two small teats.

The breeder says that this goat "strangely enough gradually developed (as far as one could see) the distinctive organ of the hermaphrodite as she grew up."

(2) The owner of (1) mentions coming across another of these goats, quite a fine female in appearance, no male characteristics at all, except a strong goaty smell. She never bred.

(3) Pedigree Swiss (Toggenburg type), bought as a kid as a female, but the animal grew to a great size, eventually "smelled worse than a male goat," and became so vicious, biting other animals, owner, &c., that it had to be destroyed.

(4) Reddish brown goat, marked with black dorsal band,

shoulder stripe and other shadings, and white. This goat, fully adult (fig. 1), is much bigger and more masculine in appearance than a female, and has always been used by children as a chaise goat. Nothing is known about it by its present owner beyond the fact that it is a pedigree goat. It has no goaty smell and never evinces any desire to breed. It dribbles its urine. It has a very masculine head and beard and a feminine body. It has two small teats. In character it is bold but gentle; much given to rearing up and butting like a male. It passes for a female with everyone, and is superficially formed like one.

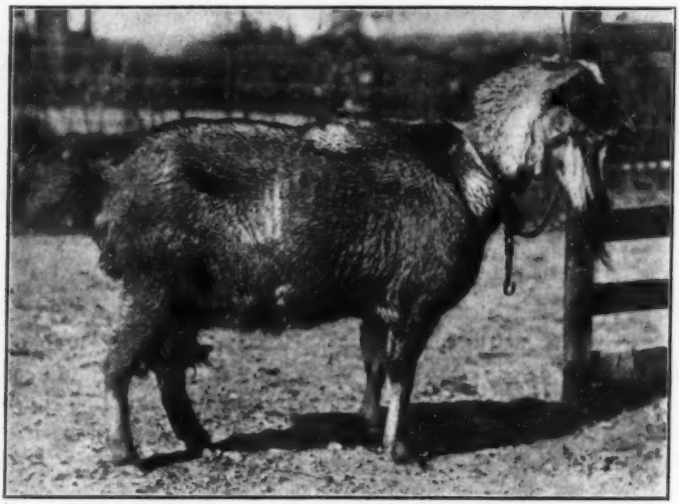


FIG. 1.—A "Free Martin" Goat (No. 4 in the text).

(5) Pedigree Toggenburg, born as twin to a normal female. This is the animal already alluded to as having been operated on.

(6) Pedigree Toggenburg, with no outward appearance of being abnormal, except *very* small teats and a masculine build. This goat has never come in season or shown any inclination to breed. She has no goaty smell. She won first prizes as a she-kid and she-goatling. The owner says that goats of this class are not unusual and that they sometimes win prizes as very fine she-kids.

In addition to these particulars, obtained from various

sources, the writer was fortunate enough to be able to procure from a breeder what was described as a typical hermaphrodite goat. The animal was a black and white, hornless, short-haired Anglo-Swiss kid, born March 29, 1912, and eligible for entry in the Herd Book (fig. 2). It was bred as the result of mating a son with his mother when he was about 6 months old. Three kids were born, one male, one female (born dead), and this so-called hermaphrodite.

The kid was kept under close observation from a fortnight old and reared to the age of nearly five months.

The kid passed for a female, but was not formed precisely

FIG. 2.—An Anglo-Swiss Kid ("Free Martin" No. 6 in the text).

like one, for the external orifice was lower down than in a normal female, and there was a glans penis visible.

The teats were rudimentary, there was no pendulous scrotum, but there were projections in the groins, which first began to be visible towards the end of May, when the animal was nearing two months old, and rapidly swelled till they became of noticeable dimensions (fig. 3).

Partly because the kid assumed the male position—stretched out with concave back—and partly because of the interference of the glans at the orifice, the urine soiled the legs and stained the coat. Sometimes it was passed forward between the legs,

at other times it was sprinkled, and it was almost always discharged jerkily.

At from four to five months old a slight smell was occasionally noticeable, suggesting that the kid would eventually develop the characteristic odour of the male goat.

The kid developed a beard.

In shape of head and body the animal was thoroughly effeminate, but it had some of the dirty habits peculiar to the male goat, and exhibited a number of masculine traits, such as manner of charging, &c. In character it had all the boldness and confidence of a male, and there was an entire absence of anything like feminine timidity.

FIG. 3.—View of Hind Quarters of Anglo-Swiss Kid (same as fig. 2).

The kid was killed on August 20, 1912, and was by the kindness of the authorities in charge of the Museum of the Royal College of Surgeons submitted to a careful dissection and examination.

Dr. A. Keith describes the kid as "what is usually called a hermaphrodite—or rather, an imperfect male—exactly similar to the free martin of cattle."

The report of the dissection is as follows (see fig. 4):—

"The large glands which lie in the imperfect scrotum are testicles, and yet the genital epithelium which lines the tubules of

the testicle does not show any trace of forming spermatozoa. The lining cells are columnar and evidently represent the supporting cells only, the real genital or sperm-forming cells being quite absent. I expected to see between the seminal tubules abundance of those cells called interstitial—they seem to be the ones which actually influence the development of certain secondary sexual

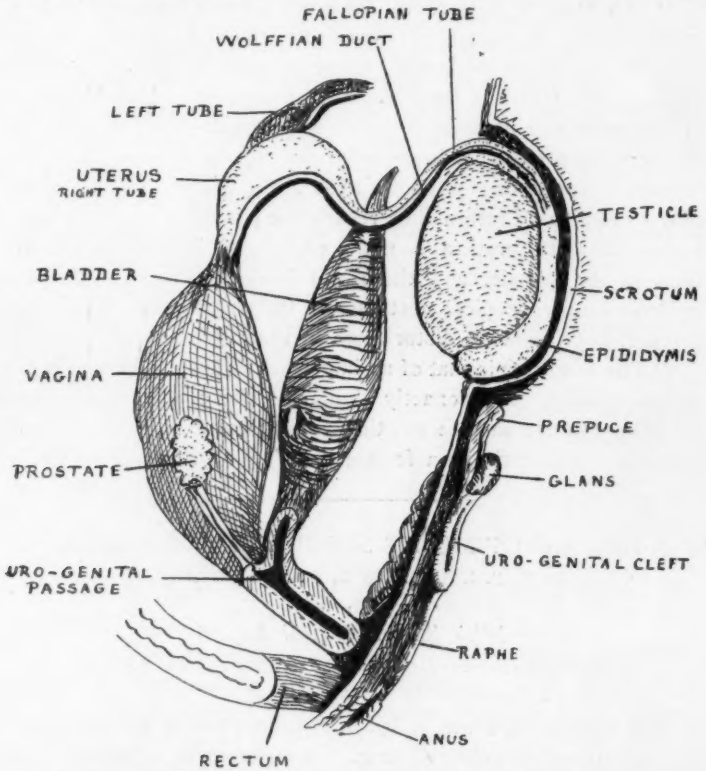


FIG. 4.—Dissection of Generative Organs of Goat shown in figs. 2 and 3.

characters—but in your goat these interstitial cells are present, but there are very few of them. Leading away from each of the large testes are two ducts: (1) The ordinary sperm duct (Wolffian duct), small, ill-developed, which when traced down loses itself in the wall of the vagina; (2) the oviduct or Fallopian tube, which leads to a uterus of moderate size; the two uteri end in a capacious vagina, which, however, has a very small

opening into the uro-genital passage. On each side of the vagina is a small gland, about the size of an almond, which I take to represent the prostate, because it has the microscopic structure of that gland. It may be Cowper's gland; its duct opens into the uro-genital passage at the side of the orifice of the vagina. In any case, it is a secondary sexual organ of the male.

"The bladder is normal. The uro-genital passage, leading from bladder and vagina, is formed as in the male, until it reaches the exterior in the perineum, where it ends in a cleft, the uro-genital cleft, which is surrounded by free folds. The formation of the penis and urethra in the penis is arrested. The glans of the penis is present; it is unperforated by the urethra as in the female; the prepuce is not folded round the glans. The condition of the penis and urethra thus recalls the condition in the female, except that the urethra is more prolonged into the perineum than in the female, and the glans is much larger. We also examined microscopical sections of the suprarenal bodies and thyroid, but found no disturbance in their structure.

"The condition is that of an imperfect male—sometimes called hermaphrodite. It is exactly similar to the condition described by John Hunter in free martins among cattle, the free martin being always a twin to a female calf."

A DISEASE OF MULES SIMULATING GLANDERS.*

By D. P. LAURENCE EDWARDS, M.R.C.V.S.,
Suva, Fiji.

With Bacteriological Report

By ARCHIBALD IRELAND, M.R.C.S., L.R.C.P., D.P.H.Oxon.
Medical Officer of Health, Suva, Fiji.

On August 18, I was called in to attend five mules at Naselai. I found them all suffering from a lymphangitis of one or more legs. There was also cording of the lymphatics. These abscesses appeared cold and painless; they were nodular and freely movable under the skin and hard, very much resembling small subcutaneous fibromata. A very small percentage of them

* We shall be glad if you will kindly publish our report in your Journal, as we are unaware of any published description of the disease. We note on page 600 of Ostertag's "Meat Inspection," third edition, 1907, that a pseudo-glanders bacillus staining by Gram's method was isolated by him from horses. It is to be noticed, however, that the disease investigated by us was confined to mules, although there were horses in the same stables, and that the Schneiderean mucosa was affected in all cases, whereas the cases from which Nocard isolated his organism presented only skin lesions.—A. I. and D. L. E.

had burst, and were discharging a small amount of thickish white pus (consistency of cream). Some of these abscesses showed signs of healing. The size varied from the size of a pea to that of a hen's egg. They were situated on the inside of the thighs and hocks.

Two of these mules had a profuse blood-stained tenacious discharge from both nostrils, and ulcers the size of two-shilling pieces were found both on the septum and other parts of the nasal mucous membrane. There was not any adenitis of the submaxillary glands. The temperature was slightly raised, being between 102° and 103° F. All the mules were eating well and showed no signs of depression. The lymphangitis was not very pronounced, moderately painful, and the mules were fairly lame. Swellings were also present on the abdominal walls.

As it was thought that this might be an outbreak of glanders these mules were malleined (Cutter Laboratory Mallein, Berkeley, U.S.A.), but did not react. There was only one local swelling 3 in. by 2 in. at its maximum. This was painless, and disappeared in thirty hours. None of the mules showed any systemic disturbance.

Smears of pus from an unbroken abscess were then examined for the "cryptococcus of Rivolta," but it was not present.

These mules were then isolated at one end of the stable, the best that could be done as there was then only one stable on the estate, but an isolation stable has since been built.

On August 20, two mules were suffering from laryngitis, and on August 24 tracheotomy was performed on three mules, one more having developed laryngitis in the interval.

On September 4 a mule died, and a *post-mortem* examination was made. Gangrenous pneumonia affecting both lungs was found, but no nodules. There was also extensive ulceration of the mucous membrane of the nose and bones, and the septum nasi was ulcerated through, the hole being 1½ in. by 1 in. There was extensive ulceration of the larynx. The facial sinuses were healthy, and there was no ulceration of the treachea. The lymphangitis was associated with the usual straw-coloured exudate; the subcutaneous abscesses had very thick walls ½ to 1 in. thick, and contained a small suppurating centre, the pus being thick.

I have been able to make six other *post-mortem* examinations, and in these mules I have found the same lesions with the excep-

tion of gangrenous pneumonia. In five cases small abscesses were found in the lung, also abscesses in the pharyngeal and mesenteric glands.

Thirteen mules have died, and six are now affected. No mule that has once shown symptoms of the disease has made a permanent recovery. Four mules have made apparent recovery, but all have had a relapse, and three are already dead.

Case 1.—Chestnut female mule showed in October lymphangitis and abscess on near fore leg, recovered and remained apparently healthy three months.

Case 2.—Brown mule gelding, lymphangitis of hind leg. Abscess on scrotum remained apparently healthy two months.

Cases 3 and 4.—These mules only remained apparently healthy for two weeks.

The estate was absolutely free from disease for a fortnight in October last; at the end of that period it again broke out. The longest period that the stud has remained free after isolation of all affected animals in a separate stable is three weeks, but I do not pay much attention to this, as where Indian labour is employed on a small estate absolutely strict isolation is practically impossible.

A vaccine was prepared, and on November 19 all mules on the estate received a subcutaneous injection of 360 million bacteria, and the sick two further doses of 260 million at intervals of five days. On February 19 all the mules received a further injection of 720 million. Since the preparation of the vaccine, all the diseased mules have received three doses of vaccine at intervals of five days whenever possible.

Since the introduction of the vaccine, the course has become far less acute. At the beginning death occurred in twenty-one to twenty-eight days, now death never occurs in less than seven weeks; often longer. Whether this is due to the vaccine or not I am not prepared to say, but I regret that I was not able to use the vaccine more regularly in all cases. The lesions in the nose do not progress half so rapidly, and the nasal ulcers are smaller in size, being of the size of 1s., and a few the size of 6d. The first symptoms are usually those described in the five mules. The next that is seen is laryngitis. This occurs after a variable period of about three days to three or five weeks. Swollen lymphatics and subcutaneous abscesses make their appearance all over the body. These abscesses show no great tendency to

burst, only about 15 per cent. breaking naturally. They discharge for a few days, and heal up in about ten days. This is very short time for healing in this country, where wounds take 100 per cent. longer to heal than in Great Britain. Many of these abscesses become reabsorbed without breaking. If lanced, they will often heal up before all the pus has been evacuated, and a secondary abscess sometimes forms.

The septum is usually perforated by the ulcers in ten to thirty days. I do not think that these large ulcers are formed by the anastomosis of smaller ones. The submaxillary glands when swollen usually show three or four large nodules, and it is never firmly attached to the ramus of the jaw, being freely movable, and in about 20 per cent. of cases it suppurates. This lesion is not always present when there are lesions in the nose, but it is present fairly often—about 50 per cent. The size of the gland also bears no relation to the extent of the lesions in the nose, very often the submaxillary swelling is on the opposite side of the nasal ulcers, and though towards the end the nasal lesions are bilateral, the submaxillary swelling remains very often unilateral.

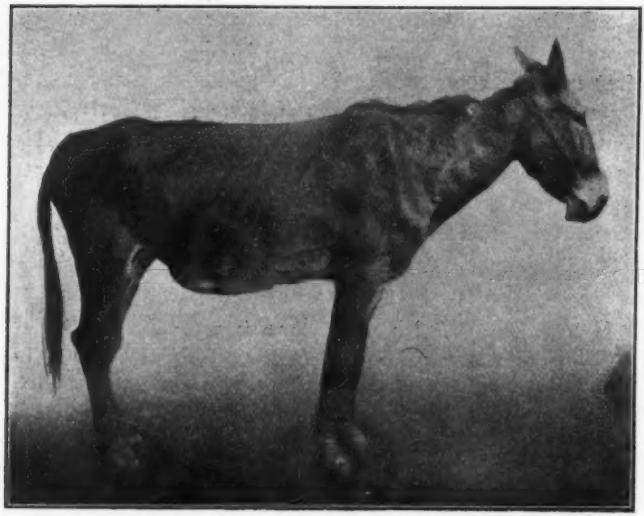
The final stage is pneumonia, shortly followed by death.

I find that this disease is also present in the Nadi district. In February, 1911, I was called in to investigate an alleged outbreak of glanders on "Mugunyah" plantation there. On my arrival, I found that there had been two suspicious cases, one mule having died before my arrival; the second mule was alive, and after a careful examination I came to the conclusion that it was perfectly healthy. On my questioning the stockman, he told me the symptoms shown by the dead mule, and I am convinced that the mule died from this disease. Another outbreak was reported on this estate in October last; two mules were malleined by the stockman. One was said to have reacted. On my arrival, I found that the mule that was said to be a reaction was the mule that had been regarded by them as suspicious in February. He had, however, remained apparently healthy, and appeared quite healthy when I saw him. I found that the reaction was based on local swelling, but that the mallein had been injected at the lower edge of the mane, just in front of the withers, and naturally a swelling had occurred. This lasted two or three days only. The mule is still healthy and at work. The second case said not to have reacted was a 4-year-old mule, who was a perfectly typical case of this disease. This mule died three weeks

after I saw it. Since then there has not been another case on this plantation.

I find that these two mules at Nadi and the mules that first showed signs of disease at Naselai, arrived in Fiji from U.S.A. in S.S. "Waitemata," August, 1910, and before being shipped were malleined by a M.R.C.V.S. at San Francisco.

A photograph of a typical case is enclosed.



CASE OF MULE SUFFERING FROM THIS DISEASE.

Note swollen lymphatics and abscesses on neck, side flank, and belly. Note œdema on abdominal wall and lymphangitis of legs. This animal also had ulceration of septum nasi. This is one of the animals from which the bacillus was isolated.

I beg, in conclusion, to point out in my opinion the main differences between this disease and glanders:—

(*a*) Abscesses do not tend to burst, and having burst, quickly heal.

(*b*) The large amount of fibrous tissue wall and small suppurating centre.

(*c*) Large size of nasal ulcers and rapid rate at which ulceration proceeds.

(*d*) The large number of cases in which the submaxillary gland suppurates.

(*e*) Absence of nodules in lungs.

Since writing the above report I have to say that my recom-

mendations were carried out; the remaining six mules were destroyed, and the buildings disinfected.

There has been no further recurrence of the disease. *Post-mortem* examinations of these six mules were made, but no further light was thrown on the pathology of the disease.

REPORT OF THE BACTERIOLOGY OF A DISEASE AFFECTING MULES IN THE REWA DISTRICT, BY ARCHIBALD IRELAND, M.R.C.S., L.R.C.P., D.P.H.Oxon.

On November 3, 1911, at the request of the veterinary surgeon, I visited the estate of Naselai, near Nausori, in company with him.

Some of the mules on this estate were suffering from a disease simulating in some of its clinical features glanders. The most striking and constant lesions were ulceration of the nasal mucous membrane and superficial abscesses about the neck and upper parts of the legs.

Cultures.—I inoculated the following tubes:—

(*a*) Glycerine potato, from nasal mucous membrane.

(*b*) Glycerine potato, from small abscess in the neck.

(*c*) Agar-agar slope, from small abscess in the neck.

All from the same animal, which presented well-marked lesions.

They were incubated at 37° C., as were all cultures used in this investigation.

Tube A in forty-eight hours presented a luxuriant mixed growth. The surface of the potato was covered with a creamy custard-like growth, very profuse, and spreading on to the sides of the tube. There were also a few discrete round white colonies, one large orange yellow colony, and one large brown one. The white colonies gave a Gram-positive staphylococcus, as also did the orange yellow one. The brown colony proved to be a long narrow club-shaped bacillus, showing marked unipolar staining with methylene blue; it was, in fact, a chromogenic organism. The organism producing the main custard-like growth was a small bacillus with rounded ends, staining somewhat faintly with methylene blue, and Gram-positive, though not deeply stained by this method.

Tube B in forty-eight hours showed a small discrete golden yellow growth. Slides from this culture showed a small bacillus with rounded ends, staining faintly with methylene blue, and not

decolourized by Gram's method, though not deeply stained. This bacillus was in pure culture in this tube.

Tube C in forty-eight hours gave a number of small discrete whitish colonies, the organism comprising which, and which was in pure culture, was a small bacillus with the same porphology and staining reactions as the bacillus described above as occurring in the custard-like growth of tube *A*, and in the pure culture of tube *B*.

Thus a bacillus was obtained from the lesions, in pure culture in tubes *B* and *C*, and from the custard-like growth of tube *A*, having the same morphology and staining reactions.

Subcultures.—A series of subcultures was made from the custard-like growth of tube *A*, and from tubes *B* and *C*, inoculating them from potato to agar, and from agar to potato alternately, and a pure strain of a bacillus thus obtained in each instance.

The bacillus thus isolated was identical in size, morphology, staining reactions, and cultural characteristics in all three series.

Description.—It is a small slender bacillus, with rounded ends, showing beading of the protoplasm. It was of uniform size in all the cultures, being in length 2 to 3μ (about the size of *B. typhosus* in young culture). No involution forms were seen. It stained somewhat faintly with methylene blue, and was not decolourized by Gram's method, though staining but faintly.

Cultural Characteristics.—Glycerine-potato, in twenty-four hours, a small creamy growth, slightly yellow, more abundant in forty-eight hours, and becoming a darker brownish yellow in seventy-two hours, and gradually turning to a chocolate colour in three weeks.

On agar slope, in twenty-four hours, a semi-transparent whitish growth, not luxuriant, and with little tendency to spread; it became more opaque as it grew thicker, but no further change occurred in it.

Glucose-litmus agar (stab), in twenty-four hours showed no growth, but in three days a little whitish growth showed in the upper part of the needle track, with slight acid production, but no gas.

Vaccine.—On November 8, a vaccine was prepared from culture tube *C* after it had been re-examined and found uncontaminated; an emulsion was made, 10 c.c. of which contained 360 million bacilli, using normal salt solution with 0.25 per cent.

lysol. The emulsion was then placed in the hot-water oven at 60° C for one hour.

On November 9, the mule from which the cultures were made was injected with 10 c.c. = 360 million bacilli, and on November 14, a further dose of 720 million bacilli were given to the same animal.

The mule showed some improvement after the first injection, the abscesses resolved, and the pus formation ceased. It had, however, developed a septic pneumonia, of which it died on November 20. *Post-mortem*—no pus was found in the swellings about the neck and legs.

On November 17, nineteen further mules were injected with the same vaccine, giving 360 million bacilli to each. Of these, five were affected with the disease. On November 21, one more animal received a dose of 360 million.

The veterinary surgeon reported November 21 that after the injection of the vaccine:—

(1) The pus in the abscesses showed a marked tendency to dry up, and that local swellings disappeared.

(2) The ulceration of the mucous membrane was retarded.

(3) The laryngitis remained unaltered.

Inoculation of Animals.—The following experiments were carried out:—

On November 15, two guinea-pigs X and Y were inoculated with emulsion from tube R (agar), subculture 3rd from tube B.

X, a female, intraperitoneally.

Y, a male, by scarification (right hind leg).

X was unaffected, and is now alive and well.

Y died on the eighth day.

Post-mortem.—This guinea-pig Y showed the following lesions: The seat of scarification was normal and there was no enlarged glands. The liver, spleen, and kidneys were normal. There was pneumonia of the left lung, and the suprarenals were both red and engorged, especially the left. Both testicles were found in the abdomen, and were slightly enlarged, and both epididymi were dark red and engorged.

The following cultures were made, using agar-agar slopes, from:—(*a*) Heart blood, (*b*) Left lung, (*c*) Suprarenal, (*d*) Testicle.

Each of these four tubes gave a growth identical with the growth on agar of the original bacillus isolated from the mule,

and subcultures on potato and glucoselitmus agar grew in a precisely similar manner to the growth on these media of the original organism.

The four cultures (*a*), (*b*), (*c*), and (*d*) were pure, and showed a bacillus having the size, morphology, and staining reactions of that organism, as did also all the subcultures.

It gives the indole reaction in a seven days' broth culture. It does not stain with osmic acid or with Sudan III.

On November 24, a further guinea-pig was inoculated subcutaneously with an emulsion from subculture V (agar 3rd from B). This guinea-pig Z lived for seventy-five days, and then died. No obvious lesions were present, and the cause of death was not apparent.

On November 12, a horse was inoculated with an emulsion from an agar subculture, second from (*d*) guinea-pig. This horse died on the eleventh day. *Post-mortem*—there was found to be much swelling about the site of the injection, which was subcutaneous, and there were small abscesses in the subcutaneous tissue in this situation (the near fore leg), and there were also small abscesses in the lungs and liver. Early peritonitis with some ascites was also present.

Unfortunately I was unable to obtain cultures from this animal.

The conclusions to be drawn from these investigations are:—

That the bacillus isolated, and which it is reasonable to suppose is the cause of the disease, although resembling *B. mallei* in some respects, is certainly not identical with it. The differences shown are in:—

(*a*) *Morphology*.—The bacillus isolated is smaller than *B. mallei*.

(*b*) *Cultural Characteristics*.—The growth on potato was very considerably different to that of *B. mallei;* the growth was much more rapid, giving a creamy growth in twenty-four hours, whereas *B. mallei* is seldom distinguishable in culture till the third day, and is then seen as clear yellow drops like honey, and this is commonly regarded as characteristic of *B. mallei* and peculiar to it.

The growth on agar never became brown as does that of *B. mallei*.

(*c*) *Staining Reactions*.—The bacillus isolated was cons s-

tently Gram-positive, whereas *B. mallei* is easily decolourized by this method.

With regard to the inoculation experiments:—

It is greatly to be regretted that a mule could not be obtained for this purpose, as the disease has so far been confined to those animals, and horses, although exposed to infection, and using the same stables, have escaped infection with the disease.

The recovery of the organism from the testicle of guinea-pig Y, and the fact that they were affected, as were the epididymi, perhaps points to an organism allied to *B. mallei*. The death of the animal on the eighth day, however, and the death of the horse on the eleventh day, do not correspond with the usual results of inoculation with *B. mallei*.

Finally, I think from a consideration of the above data, we may conclude that although the bacillus isolated is not *B. mallei*, it may be regarded as belonging to a closely allied group.

Clinical Articles.

URINARY CALCULI IN A COB.

By G. MAYALL, M.R.C.V.S.
Bolton.

Bay cob, 4 years old, brought to me with the history that he could not make his water properly. Examination failed to reveal anything abnormal about the penis or urethra. Gave six powders pot. nit. and pot. bicarb., and told the owner to let me see him in a few days. On November 5 he was brought to me, and I had him under observation for an hour. Found him shortly after coming in attempting to urinate, but urine was only passed in driblets and with evident pain. Tried to pass the catheter, but found an obstruction about 2 in. from the urethral opening. On manipulation I could feel some little hard bodies in the urethra. I injected some olive oil up the urethra with a small syringe, and then gradually worked the hard bodies down, which proved to be three small stones. The urine flowed away in a good stream after this, and the cob has worked well and remained quite free from the trouble since.

A CASE OF "INTUSSUSCEPTION."

By Captain A. F. DEACON, A.V.C.
Remount Depôt, Lusk.

On November 21, a horse was brought in from grass at 8 a.m., trembling and sweating freely and in great pain, evinced by getting down as low as possible, with his fore-legs stretched out and his head between them, resting his forehead on the ground. When standing he seemed unable to raise his head.

Treatment.—Fæces taken from rectum, which was very full, and enemas given. This gave great relief. Temperature, 104.6; respiration, 26; pulse, 58 when first taken in.

At 4 p.m. on the same day he had another attack, the same treatment giving relief. Temperature 103; respiration 24; pulse 50.

At 10 p.m. he was again treated, though the bad symptoms have not again appeared. He passed a fair night.

November 22, 1912.—At 6.30 a.m. treatment again continued. Temperature 103.2; respiration 24; pulse 52.

At 3.30 he had another bad turn, treatment once more relieving him. Temperature 104.2; respiration 26; pulse 52. Treatment repeated at 10 p.m.

November 23, 1912.—At 6.30 a.m. treatment continued, but not during the day, as no bad turns occurred and he was straining a great deal. Temperature 102.4; respiration 20; pulse 52.

At 5.30 p.m., in attempting to take away the fæces, it was found that there was a great deal of resistance owing to the gut being forced back, and when the hand was taken out a portion of the bowel was everted; this was put back and treatment discontinued. From this onwards he made an uninterrupted recovery during the night, passing dung, and eating a little, which he had not done previously during illness.

SUCCESSFUL TREATMENT OF TETANUS WITH LIQUOR FERRI PERCHLOR. FORT. B.P.

By J. F. D. TUTT.
Class C Student, Royal Veterinary College, London.

The great successes that have accompanied the employment of this preparation in the treatment of tetanus may, I think, be of especial interest to readers of this Journal.

The iron was given in the form of rectal injections three times a day, each of the injections having the following composition:—

Liquor ferri perchlor. fort.	...	...	3i.
H_2O (equal to body temp.)	...	...	q.s. Oi.

This was done in ten successive cases during 1911-12 and no death occurred, complete recovery taking place in two to three weeks' time, no other treatment besides this being employed. I have not seen one death when this treatment has been adopted, excepting, of course, in those cases when the horse was only seen when *in extremis*.

If any member of the profession has employed this mode of treatment, I would be very much obliged if he would record his results in this Journal.

UNUSUAL BODY IN THE THROAT OF A HEIFER.

By J. F. D. TUTT.

Class C Student, Royal Veterinary College, London.

Subject.—Shorthorn heifer.

History.—The owner had noticed that the animal was losing flesh and that her breath was very *offensive*.

On opening the mouth, a body was seen at the back of the throat, and on being withdrawn was found to be a jawbone of a sheep.

However the animal managed to get this into her throat is quite a mystery to me, and I do not remember seeing any similar case recorded. It had evidently been in this position for five or six weeks—this being the time put down by the owner since the animal began to lose health. The animal rapidly put on flesh, and was sold shortly afterwards at the local market.

A CONGENITAL DEFORMITY IN A HEIFER.

By A. ERNEST WILLETT, M.R.C.V.S.

Staines.

The case was that of an 18-months-old Shorthorn heifer, in fat condition, which was supposed to have eaten a lot of elm bark.

She was very restless, with dilated pupils, occasionally bound-

ing from side to side of the stall, grunting slightly, pulse quicker than normal, but with no temperature.

An aperient was given, and I saw her again the next day. She was then straining considerably, and rectal examination revealed what appeared to me at the time to be a distended bladder.

Congenital Deformity of the Vagina.

I proceeded to pass the catheter, but no urine followed, and a further examination revealed the condition shown in the photograph, as she was fat and in good condition before slaughter.

Post-mortem examination revealed the vagina to be practically a closed sac with fluid contents, much larger in dimensions than the whole of the uterus.

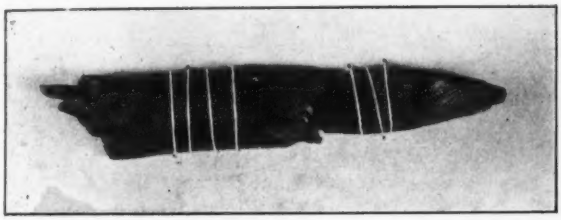
As no case of this kind has ever before come to my notice, I thought it sufficiently interesting to be worth placing on record as a guide to others who may meet with a similar condition.

FOREIGN BODY IN THE HOOF AS THE RESULT OF AN ACCIDENT.

By FREDERICK HOBDAY, F.R.C.V.S.
Kensington, W.

The figure here shown depicts two pieces of wood, reunited for the purpose of the photograph, which were taken from the hoof of a valuable hunter. The accident happened when galloping down a ride in a wood, the horse turning a complete somersault and getting up very lame, and only being got home with great difficulty. When the groom was washing the foot he found that a piece of wood had buried itself in the horn, and the top portion was withdrwn, the horse being sent to exercise in about three weeks. The wound, however, never healed completely,

and continuously discharged a little sero-sanguineous fluid. An exploratory incision was made through the wall of the hoof just below the directon of a probe which could be passed in from the top of the coronet. As a result, and after some considerable manipulation, the pointed end of the stick was seized and withdrawn.



Piece of Wood removed from Horse's Hoof (actual size).

The wound was treated antiseptically and soon healed.

The chief points of interest are the length of time it had been present without severe purulent infection, and the slight amount of lameness, when one considers the size of the piece of stick and the position in the horny hoof.

RESULTS OF AUTOPSIES ON 125 HORSES THAT DIED OF COLIC IN BERNE.

By Dr. A. REINHARDT.
Girusheim-a Rh.

From *post-mortems* on 125 horses dying of colic in Berne, Reinhardt established the following causes of death:—

In 18 cases, gastro-enteritis; 7 cases, overloading of stomach; 1 case, stoppage of ileum; 1 case, stoppage of rectum; 3 cases, stoppage of intestine through fæcal excretions; 1 case, stoppage of the colon through cicatrices; 15 cases, ruptures of the stomach; 2 cases, ruptures of the ileum; 7 cases, ruptures of the colon; 1 case, rupture of the rectum; 2 cases, volvulus of the duodenum; 11 cases, volvulus of the whole small intestine; 9 cases, volvulus of the ileum; 24 cases, volvulus of the colon; 2 cases, volvulus of the small colon; 2 cases, volvulus of the small intestine and colon; 4 cases, invagination of the small intestine; 10 cases, incarceration of intestinal segments.

A comparison of the findings at Berne with those in Berlin

are instructive. Of 428 cases in Berlin 15.18 per cent. of fatalities were due to stoppage of the colon and cæcum, whilst such cases in Berne were not seen. In large towns and in neighbourhoods where dry feeding exclusively prevails stoppage of the intestine is a much more frequent cause of death than in neighbourhoods in which dry feeding is alternated with green food.—*Deutsche tierarzt. Woch.*

Canine Clinicals.

GASTROTOMY IN A BITCH.

By G. MAYALL, M.R.C.V.S.
Bolton.

The patient was an Airedale terrier bitch, which had been gradually going thinner for some months. On examination when standing and putting on the back an elongated body not unlike a sausage-skin filled with pebbles could be found and manipulated in the stomach region and small bowel. The bitch was kept without food for twelve hours, a hypodermic injection of ½ gr. of morphia was given, and half an hour afterwards she was put on the operating-table and chloroformed. Laparotomy was then performed, and the sausage-shaped body felt for; it was found to be the stomach and about four inches of bowel leading from it. The stomach was opened, and a wonderful sight came to view, consisting of about 160 particles of different hard and soft substances. A round piece of wool, a piece of india-rubber, cotton-thread, small bones (very numerous), and two or three little stones, being among the foreign bodies found. A large opening had to be made to clear out the contents of the stomach and bowel, and the organs were repeatedly washed in warm chinosol solution to cleanse them and afterwards sutured in the usual manner. The abdominal wall (skin, muscle, and peritoneum) was sutured, and the wound covered with iodoform collodion. I did not expect the bitch to live, and she died in the night, after coming round well from the anæsthetic.

It was remarkable that she should have carried all these foreign bodies in her without any acute signs of pain and with nothing but gradually increasing loss of flesh. Her owner stated that up to the time she was 18 months old she always played about and probably swallowed any foreign articles she came

across. He considered that the things mentioned had been inside her for eighteen months at least, she being 3 years old when I operated.

CONGENITAL GOITRE IN THE DOG.

By ANTON LOKEN.

Konigsberg.

According to Professor Kitt goitre is most frequent in dogs, sheep, and goats, now and then in horses, but seldom in cattle and cats. In this district of Konigsberg most cases of this disease occur in calves and horses. In the first case the goitre is always congenital, and disappears, as a rule, in the first years of life. In the adult animal the gland is difficult to feel, or quite unfeelable. In foals congenital goitre is now and then encountered, but in old horses changes in the gland, due to hypertrophy, cysts, adenoma, and pure carcinoma, are mostly to be found. In swine and sheep cases of goitre are now and then noticed, but until recently I never saw one in the dog.

The patient was a cross-product of an elk dog and a Greenland bitch. It was brought from Greenland by a miner. It was an extraordinarily fat bitch, with a small plump head, remarkably short bones, and a great collar-like wen. This was doubled-sided, and each gland was as large as a hen's egg. The bitch was a lively little creature and sometimes ran round barking, but she soon lay flat on her side, and seemed trying to get her breath. A brother and two sisters out of the same litter as this bitch also had the disease congenitally.

According to the owner the mother had a swelling on the neck, but not the father. Three months later I saw the bitch again; the growth had increased in size, and the glands on both sides were as large as a goose's egg. Heart-beats were 144 to 150; the veins of the neck over the swelling were greatly distended; the pulse-beat at the carotid was visible at a distance.

Pot. iodide was used, and the swelling declined, and afterwards the animal appeared to develop better. Nothing was known of the cause of the complaint. Examination of the water supply gave no result, but in another case of mine on a farm, where the calves, as well as the owner, his wife, and nine children, suffered from goitre, the water was found to be radio-active.—*Deutsche tierarzt. Woch.*

Abstract and Report.

SUMMARY OF THE REPORT OF THE DEPARTMENTAL COMMITTEE ON THE PUBLIC VETERINARY SERVICES.

Minutes Appointing the Committee.

I.

I HEREBY appoint a Committee to inquire into the requirements of the public services with regard to the employment of officers possessing veterinary qualifications and to consider whether any further measures can with advantage be adopted for the selection and training of students with a view to such employment.

The Committee will be constituted as follows: Sir Alfred Hopkinson, K.C. (*Chairman*); Sir Thomas H. Elliott, K.C.B.; Sir Thomas W. Holderness, K.C.S.I.; Mr. H. J. Read, C.M.G.; Major G. F. MacMunn, D.S.O.

And I hereby appoint Sir Alfred Hopkinson to be Chairman of the Committee, and Mr. H. L. French, of the Board of Agriculture and Fisheries, to be its Secretary.

(Signed) WALTER RUNCIMAN,
President of the Board of Agriculture and Fisheries.
August 30, 1912.

II.

I hereby appoint Mr. Francis C. Drake to be a member of the Departmental Committee on the Public Veterinary Services appointed by my Minute of August 30, 1912, *vice* Sir T. W. Holderness, K.C.S.I., resigned.

(Signed) WALTER RUNCIMAN,
President of the Board of Agriculture and Fisheries.
October 25, 1912.

Summary of Principal Conclusions and Recommendations.

(25) In the course of our inquiry we have arrived at the following conclusions:—

(*a*) That the requirements of the Army Veterinary Service are adequately met at the present time. (Section 4.)

(*b*) That the number of suitable candidates for appointments in the other public veterinary services is inadequate. (Sections 8-14.)

(*c*) That a largely increased number of veterinary officers possessing special qualifications will be required for the public services. (Section 11.)

(26) With a view to increase the number of highly qualified

veterinary surgeons available for employment in the public services, we recommend that:—

(*a*) Students possessing a suitable science degree should be granted exemption from one of the four years at present required for veterinary qualification, and that the requisite adjustment should be made in the course at the veterinary colleges. (Section 15.)

(*b*) Twelve scholarships should be offered each year of the annual value of £80, each tenable at a veterinary college for three years, with a view to encourage a number of men who have received a good scientific education to enter the veterinary profession. (Section 16.)

(*c*) Scholarships of an annual value of not less than £100 and not exceeding £150 should be offered each year to enable qualified veterinary surgeons to undertake advanced study and laboratory work at suitable institutions. (Section 19.)

(*d*) The method of notifying vacancies in the public veterinary services should be improved as above suggested. (Section 21.)

(*e*) Increased State aid should be given to institutions devoted to veterinary education. (Section 24.)

We believe that the adoption of these recommendations would lead to the more general recognition of the veterinary services concerned as constituting an essential part of the Government administration.

VICTORIA VETERINARY BENEVOLENT FUND.

THE quarterly meeting of the Council of the above Fund was held at 10, Red Lion Square, London, on Thursday, January 9, at 5 o'clock. Present were: Messrs. W. Freeman Barrett (President), in the chair; J. Dunstan, Hugh A. MacCormack, G. A. Banham, S. Slocock, F. Hobday, H. Sumner, W. Burt, and W. Shipley (Secretary).

The minutes of the last meeting, as published in the Veterinary Press, were adopted.

The Secretary then read the following report:—

Gentlemen,—It is my pleasure to present my quarterly report. As you are aware, owing to the alteration in the ending of our financial year passed at the meeting in Dublin, we have only nine months to deal with. I should also point out that as subscriptions are due on January 1 of each year, I have had only a few arrears of old subscriptions. The remainder of our income and expenditure has been from new subscribers and interest from invested funds, plus the accrued balance of last year.

Since the publication of our annual balance sheet we have received in interest and dividends £67 0s. 4d.; in outstanding subscriptions, £5 13s. 6d.; in new subscribers, £59 5s.; in new donations, £64 12s.; and one life member, £10 10s. These two later sums must be invested, as by Rule 4, and are not available for present use.

We have increased the grants to our recipients in the cases of Mrs. Jones, Mrs. Gibson, and Mrs. Barford, to 10s. per week. We also increased the grant to a similar sum to Mr. Grinton, who, unfortunately, lived only a short time to enjoy it. Fresh grants of 10s. per week were made to Miss Horton, towards the education of her late brother's children; and 5s. per week to Mrs. Porter.

The grants to those entitled to Old Age Pensions have been reorganized, in order that they should receive the full benefit of these pensions. Through the liberality of friends at Christmastide each of these have, through the authority of the Finance Committee, had little necessaries provided. I have been able to get friends who know of the condition of these poor old souls, all aged over 83, to administer a present of £2 each to them for absolute necessities. We are indebted to these gentlemen for their trouble and kindness in carrying out this work. I feel sure you will wish me to thank them.

I am unable to present the annual balance sheet audited, as time has not been available to get it through. It is not necessary to publish them before the annual meeting. I will have them ready at the next meeting. I, however, had a rough draft prepared. In this you will find our total income for the past nine months has been £135 10s. 6d. Our expenditure has been £205 3s. 1d., in monthly grants and expenses, leaving a deficiency of £69 12s. 7d., which has been met by our accumulated surplus on income account, thereby reducing that figure from £103 15s. 9d. to £34 3s. 2d. This is the only amount we have to carry on with until the new subscriptions come in.

I am aware that now we have got over the trouble of a nine months' financial year we should be able to make more satisfactory progress in our estimates.

I suggest to you seriously that we increase our present grants to all the widows in receipt of relief to a sum of 10s. per week. I feel sure you will agree with me that not one of them should have less, and that in cases where there are children dependent we should in the near future endeavour to make a grant of so much per child. At present, however, this must be only for consideration; our finances will not allow us as far as the children are concerned.

I may say that for the future year I estimate our expenditure at £350, made up of grants to our present recipients: nine at 10s. per week, £234; two fresh applications, both of whom I strongly recommend to you, £52; this is a sum of £286. Old Age Pensioners, £22 16s.; and incidental expenses, postages, &c., at £41 4s.

I estimate our income on the supposition that all our old subscribers continue; I have every reason to think they will, as I feel sure you have demonstrated to them the urgent necessity to support our Fund, and also, I think, that now the need is shown, many will seriously consider if they should not increase their present subscription. I anticipate, as the result of our work, a further increase in the subscribers.

If these happy conditions occur we should have an income of £345, made up of annual subscriptions, £248 16s.; interest and dividends, £96 7s. 6d.; plus increase of old subscriptions and new subscribers to meet deficiency.

I most urgently appeal to all members of the Council and subscribers to our Fund to do their utmost to bring the work we are doing before the members of the profession in order that we may induce them to help and increase our efficiency. May I, therefore, suggest to you that we increase the grants to Mrs. Barcham, Mrs. Muir, and Mrs. Porter to 10s. per week each. I have letters to confirm my opinion that these are deserving of our support.

I have applications for relief from Mrs. Rcd. Howard and Mrs. Irvin Roberts. I have letters and recommendations, which I produce for your consideration, and strongly recommend that a similar grant be made in each of these cases.

I have received letters of gratitude from all our old recipients. Thanks to the consideration of the Finance Committee our cheques were posted on December 23, instead of December 28, in order that the grant might be available for Christmas. I have made frequent inquiries in all old cases, and am assured that in each case our grant is urgently required.

I have received four votes for the London Orphanage Asylum. As we have no one available I suggest that if any member of the profession is interested he should apply to me at once, failing that I will return to the Secretary for distribution, with a request for favourable consideration if we have a case in the future.

I will read you correspondence from the Central Veterinary Medical Society in Ireland, and sincerely hope you will arrive at some definite conclusion to appoint the Advisory Committee selected. Perhaps in the near future we can have similar sub-committees in Scotland and Wales.

I think we should endeavour to increase the too slow but steady work we are doing. I am aware that there are many sad cases of distress that do not come to our notice, and it is only by the assistance of the Veterinary Press (to whom I am personally much indebted for valuable help) that we can bring to every member of the profession the urgency of our appeal. Unfortunately we are at present unable to let the wives and children of the members of the profession know of our existence; could we do so much suffering and distress could be relieved.

It is to be hoped members of the Fund will remit their subscriptions at their earliest opportunity. By doing this some bit of expense in the way of postages may be saved.

Let me take this opportunity to wish all prosperity to the members and to the Fund for the New Year.

It was resolved to confirm the action of the Finance Committee in making the Christmas grant to the Old Age Pensioners, and the Secretary was requested to write and thank the friends who had administered the money.

It was proposed by Mr. Sumner, and seconded by Mr.

Slocock, that the grant to Mrs. Barcham be increased to 10s. per week.

In the cases of Mrs. Muir and Mrs. Porter the grants to be continued as before; further inquiries to be made.

In the case of fresh applications for relief, in one case it was considered desirable to obtain a doctor's report as to the inability to work, when, if satisfactory, a grant not exceeding 10s. per week be made. In a second case, as a grant of 5s. per week had already been made by the Benevolent and Defence Society, a grant of 5s. per week was, on the proposition of Mr. Sumner, and seconded by Mr. Slocock, ordered, and further inquiries to be continued.

The Secretary was instructed to return the voting papers to the London Orphanage Asylum, and request that this action should be considered in case of an application by the Council for support in some future case on behalf of the Fund.

Correspondence was read from the Central Veterinary Medical Society of Ireland referring to the appointment of a sub-committee in Ireland, "for the consideration and recommendation of applications for relief and the furtherance of the objects of the Fund in Ireland."

The Council felt grateful for the help of, and consideration of, that Society, and were pleased to appoint on their recommendation: Messrs. J. A. Thompson (Lurgan), P. J. Howard (Ennis), J. F. Healey (Midleton), P. D. Reavey (Bundoran), and Professor O'Connor (Dublin).

The Secretary was instructed to send all necessary papers, and the particulars of these cases of relief at present in that country.

The Council view with great pleasure the increase of support received from Ireland, and hope eventually to have similar committees of recommendation appointed to further the cause of the Fund.

NEW SUBSCRIBERS: SEPTEMBER TO DECEMBER, 1912.

	£	s.	d.
H. W. Wilkinson, Dublin	0	10	6
Thos. Runciman, Ely	0	10	6
P. D. Reavy, Bundoran, Ireland	0	10	6
T. S. Atkinson, Douglas, I.O.M.	1	1	0
J. E. Johnston, Belfast	0	10	6
H. Morphew, Epsom	1	1	0
J. W. Coe, Stoke-on-Trent	0	10	6
W. Edmondson, Harrogate	0	10	6
L. C. Tipper, Moseley, Birmingham	0	10	6
H. Walpole, Whixeley, Yorks	0	10	6
J. B. A. Hare, Nava, Co. Meath	0	11	0
E. C. Winter, Limerick	0	10	6
North of Ireland Veterinary Medical Association	2	2	0
J. A. Thompson, Lurgan, Ireland	0	10	6
E. R. Edwards, Board of Agriculture ...	0	10	6

Donations.

	£	s.	d.
Anon., B. S., London	0	6	0
R. Ebbitt, Oldcastle, Ireland	0	10	0
Spreull, *re* Scottish C.V.M. Society	0	10	6
Anon.	0	10	6
Hugh Begg, Hamilton	0	10	6
A. Whicher, Bexhill-on-Sea	0	10	0
Geo. Grigson, Downham Market	1	1	0
E. A. West, London	2	2	0
H. W. Caton	2	2	0

One Life Member.

Wm. Jackson Young, Edinburgh	10	10	0

Reviews.

Veterinary Toxicology. By G. D. Lander, D.Sc., F.I.C., Professor of Chemistry and Toxicology, Royal Veterinary College, London. Demy 8vo, pp. xii+312, with 39 figures in the text. Published by Baillière, Tindall and Cox. Price 7s. 6d. net.

This is one of the most welcome volumes that have been presented to the veterinary profession for a long time, and it fills a long-felt want. It is a very comprehensive volume, and is published at a remarkably low figure, when one considers the enormous amount of information it contains and the work it has entailed. A considerable portion of the matter is original, but probably its greatest value lies in the fact that it contains a faithful compilation of the records of innumerable cases of poisoning that have occurred in actual practice. Hitherto one has had to search, and search often in vain, for records that one knew must exist. Here we have lucid abstracts of them presented to us for ready assimilation, together with the references to the original papers when further detail is required. That the text is really well up to date is shown by the fact that Theiler's experiments on the toxic doses of arsenic and copper preparations just published are included.

The subject matter is treated under five sections. The first section consists of a dissertation on poisons generally, their varieties, modes of action, diagnosis, and treatment on general lines. The second section deals with "Mineral or Inorganic Poisons"; the third section with "Organic Poisons and Drugs"; the fourth section with "Poisonous Plants," grouped according to their natural orders; while the last section, which is entitled "Chemical Toxicology," deals with the general methods of separation of poisons from organic matter in the laboratory.

Each poison is dealt with systematically as to its toxic effects, symptoms, and treatment, and the very important medico-legal aspect of the case, and in many cases it is followed by a list of references to authors and articles on the particular poison.

We have very little exception to take to the subject matter, though we are not in accord with all the author's views. For example, he tells us that "subcutaneous or intravenous injection is a method of introduction of poisons rarely, if ever, likely to give rise to poisoning." In our view, with ever-increasing use of potent drugs by these methods, the likelihood of poisoning correspondingly increases, and especially so in the case of the smaller animals where such small doses are required. It is not such a rare thing to meet with cases of poisoning by strychnine and cocaine, for instance, where they have been used for their systemic and local effects respectively. Then, with reference to absorption from the skin, it is pointed out that substances in animal or vegetable fat are fairly easily absorbed, as for example, mercury, iodides, and alkaloids. Mercuric iodide might have been referred to as a notable exception in such a list. It is a dangerous poison administered internally, and in dogs 7 or 8 gr. are usually fatal. Wooldridge, however, frequently employs 60 gr. in one ounce of lard as an ointment well rubbed into the backs of dogs affected with paraplegia, and where licking is prevented he has never observed any systemic ill effects either of mercurialism or iodism.

The figures in the text are very good, and serve to impress one with the appearances of various poisonous plants.

"Printer's errors" are very few; one of them, however, refers to a "highly vascular pulmonary *mucus*."

Dr. Lander is to be congratulated on the sterling worth of his volume, and we unhesitatingly recommend its purchase by both practitioners and students.

The volume is produced in a very handy size, and is in the usual good style of Messrs. Baillière, Tindall and Cox.

Text-book of Meat Hygiene, with Special Consideration of Ante-mortem and Post-mortem Inspection of Food-producing Animals. By Richard Edelmann, Ph.D., Medical Counsellor; Royal State Veterinarian of Saxony; Professor in the Royal Veterinary High School, Dresden. Translated by Drs. Mohler and Eichhorn. Published by Messrs. J. and A. Churchill. Price 21s. net.

During recent years attention has been specially directed to food inspection, with the result that there has been an increasing demand on the part of veterinarians and others interested in this work for a comprehensive and at the same time concise text-book and practical guide on meat inspection. This demand has, we think, been met by the publication of the revised translation of Professor Edelmann's "Text-Book of Meat Hygiene." The illustrations and coloured plates are excellent, and the general arrangement of the work is good. A distinctive feature of the

book is the extensive tabulation of certain data and conclusions. The comparison of the eruption and replacement of teeth, the composition and utilization of various meat and food products, and a scheme for the disposal of the meat of tuberculous animals are especially worthy of note. The last-mentioned is of less value to English veterinarians and inspectors than the preceding on account of its American adaptation, but it serves as a very useful comparison of the English and American methods. Every branch of the subject of meat inspection is dealt with in a systematic, thorough, and at the same time concise manner, including the morphology and chemistry of the principal tissues and organs, the production, preparation, and conservation of meat, abnormal conditions and diseases of food-producing animals, *post-mortem* changes of meat, the examination of preserved meat, poultry, game, fish, &c., and meat poisoning, while a chapter is devoted to the consideration of abattoirs and stockyards. The question of fraudulent substitutions for meat is gone into as thoroughly as a work of this sort will permit, and some extremely useful comparisons are made. Three chapters are devoted to American methods of procedure in inspection and in the disposal of condemned meat, which, though differing from English methods in very many respects, are yet useful for purposes of comparison. It would have been well in a recent work of this kind had more space been allotted to the consideration of Johne's disease, which is barely mentioned. In the diagnosis of anthrax also we feel that the author would have done well to have mentioned McFadyean's colour reaction; since in the case of emergency slaughter when a microscopic examination is made of the spleen pulp besides the blood from peripheral veins as is suggested in the text, few or no anthrax bacilli may be found. It is always easy in a work of this sort to find points which are open to criticism, but they are, after all, only minor points, and we feel that the work fulfils all the requirements of a "convenient and authoritative guide to inspectors, as well as an admirable text-book and work of reference for students and veterinarians."

Veterinarians' Handbook of Materia Medica and Therapeutics. By D. H. Udall, B.S.A., D.V.M., Professor of Veterinary Medicine and Hygiene, New York State Veterinary College. Size, 4¼ by 6½ in. Pp. 177, flexible leather binding. Price $1.75 net, post paid. Published by Carpentier and Company, Ithaca, N.Y.

In this handbook the author has attempted to put before the veterinary practitioner, in a condensed and simple form, much material relating to the uses and doses of the various drugs, the treatment of diseases, and the symptoms and antidotes of the commoner poisons. The arrangement of the book is simple and effective. The subjects dealt with are split up into eleven divisions; the two long ones, Nos. 4 and 5, relating to drugs and diseases respectively, are arranged alphabetically, so dispensing with a

detailed index. In division 4, under many of the drugs, numbered prescriptions are given containing the drug as an active agent. This arrangement greatly simplifies and shortens the written matter in the next division dealing with the treatment of diseases; the drug recommended is named, followed by the prescription number, so showing the manner and combination in which its action can best be obtained.

Tables of weights, measures, and solubility are included, also obstetrical tables, and tables of temperature, pulse, respiration, and dentition, followed by a small amount of hygiene in connection with the construction and disinfection of stables.

Division 10 covers eight and a half pages, and treats minutely with the routine which *should* be observed in making clinical diagnoses. The reading of this section alone should do good, if only to remind some of us of the necessity for attention to detail in order to make a correct diagnosis.

It is unnecessary to attempt a detailed criticism of the whole book, but some parts appear to merit more than passing attention. Some inconsistency is shown in taking, as the standard in the table of percentage solutions, water at 4° C., then in the following table of solubility calculating with water at 25° C.

It is inevitable that a book of this description contains much matter about which there is sure to be great difference of opinion. For example, in the doses given of some purgatives the author gives, quite unqualified, the dose of aloes barb. for a horse as 1 oz. up to half as much again; further, in the treatment of forage poisoning—intestinal intoxication—he advises the administration of 4 to 8 drachms of aloin, one or two pounds of sulphate of sodium daily; he follows this advice by saying that sometimes heroic doses of salts or aloes are required to purge animals in these cases. Many on this side of the Atlantic will not deny that these doses are somewhat heroic. Again, in intestinal impaction the "administration night and morning of a quart of oil (kind not mentioned), followed in a few hours by arecolin ½-1 gr. until impaction is relieved" does not appear particularly sound advice. It is well known that there is a great difference in the amount required of some purgatives in the south of England to that required in the north; doubtless the same variations exist in America, and a remark to that effect should have been made.

The suggestion to put on heel springs to spread the hoof in navicular disease is somewhat old and rusty, and will not gain much credence.

The section on stable construction might with benefit have been written at greater length—even at the expense of eliminating the three pages of the parturition table—and the construction of horse stables might then have been dealt with separately from that of cowsheds.

Writing on the subject of ventilation, the author describes where the air *exits enter* the stable, and recommends a single exit of 12 to 14 in. in diameter as suitable for a building containing ten to twelve large animals. We do not consider this to be sufficient, neither do we agree that enlarging the diameter of the

single exit was the ideal method of meeting any further demand due to a large increase in the number of animals. It would be far better to increase the number of exits, and place them at intervals along the whole length of the building.

The table of the dentition of the ox is not in accordance with the commonly accepted opinion in this country, neither is that of swine as complete as it might be.

The author states in his preface that the typographical and other errors have been materially reduced. Many still exist.

In spite of these criticisms, however, we are sure that this volume, so handy in size and so full of information, will be found of great service to both students and practitioners.

The printing, binding, and general finish of the book reflect credit on the publishers.

Personal.

PROFESSOR WOODRUFF has sailed for Australia to take up his duties as Director and Professor of Pathology at the Melbourne University Veterinary School. His departure was marked by a farewell dinner, given in his honour, and by the presentation of a handsome silver bowl inscribed with the good wishes of his many professional friends.

MR. J. W. T. MOORE, F.R.C.V.S., the Chief Veterinary Superintendent of the Woodside Lairage, Birkenhead, has recently been presented with a gold signet ring and a handsome silver rose bowl, as tokens of the good esteem in which his services have been held by the Liverpool Foreign Cattle Traders' Association.

Mr. Moore has held the position for many years, and has retired on account of age. It must be satisfactory to him to have these tokens of appreciation.

MR. BARNES, M.R.C.V.S., has resigned the position which he has held for some years, of Superintendent of Veterinary Inspector to the Metropolitan Cattle Market, Islington, and will shortly take up the position of Veterinary Inspector to the Municipal Abattoirs at Durban, Natal. Mr. Barnes has made himself very popular by his geniality towards the students of the Royal Veterinary College who were privileged to attend his demonstrations on Meat Inspection, and carries with him to South Africa many expressions of goodwill. His position in London will be filled by Mr. Hayhurst, M.R.C.V.S., formerly of Blackburn.

Translations.

INITIAL MESALLIANCE, TELEGONY OR IMPREGNATION.

M. JACOULET mentioned a work on this subject by Veterinary-Major Dr. Chornel at the sitting of "La Société Centrale de Médecine Vétérinaire," on April 4, 1912.

This work is of great interest to animal breeders. Since the time of Darwin the question has been known and discussed: Is it possible by mating to so influence a mother animal that subsequent offspring of another father inherit the peculiarities of the first sire?

This question, generally designated as infection of the mother, was denied by Settegast, Nathusius, Weissmann, Kent, Jansen, and others. It was considered that all progeny of this kind of a pure breed was the simple product of atavism.

Dr. Chornel in his recent work has recorded his own observations, which support the view of the impregnation or infection of the dam or female plant.

Lesbre and Pulliat give proofs that plants produced naturally or artificially may be influenced completely and continuously in the manner described.

Dr. Chornel cites the well-known case of a mare which was covered by a zebra stallion and produced striped foals in every case even to the third generation, although pure-bred stallions were used.

Further, the experiments by Cuénot in Nancy with yellow and white mice support this view. These results give irrefutable proof of the infection of the dam.

Dr. Debierre raised the not uninteresting question: Is it true that the first child of a woman so influences her that a child by a second husband inherits the peculiarities of the child of the first father?

A recent decision at Bordeaux supports the initial mésalliance view. A greyhound bitch was covered by a mongrel in a railway van. The owner sued the railway company, because the subsequent litter would be valueless and the bitch spoiled for future breeding. The law upheld the contention, and gave a verdict for the plaintiff on all counts.—*Schweizer Archiv für Tierheilkunde.*

COMPREHENSIVE SURVEY OF ZELLER'S CANCER TREATMENT.*

BY PROFESSOR DR. B. LEWIN.

ZELLER, who has been experimenting for seventeen years with a view to avoiding operative treatment in cancer, has succeeded in curing this malady, or limiting it, by means of silicic acid. In this way he has caused nine tumours to disappear. The silicic

* "Die Therapie der Gegenwart" (Present-day Therapy), No. 9, pp. 403-406.

acid is given three times daily, the dose being 0.18 gr. in the form of potassium and sodium sillicate, or fifteen drops of liquor kal. silicate in a glass of water. Tumours greatly attacked by decay were, however, only checked in their growth, whilst necrosis and putrefaction advanced. In order to hinder the formation of the ptomaine, so injurious to the body, Zeller applied also an arsenic and mercury paste externally, made up as follows:—

Acid arsenic	5.0
Cinnabar (hydrarg. sulphurat. rubrum.) (Trans.)	15.0
Carbon vegetab.	1.0
Res. dracon	1.5
Fiat pasta, ad	100.0

Since November, 1910, fifty-seven cases have been treated by the internal and external therapy, and forty-four have been completely cured, whilst ten are still under treatment.

The following short directions are given by Zeller to those who wish to adopt his method. At first the cancerous tumour and its region are cleansed with benzene. Then the modified paste, called by Zeller "Zinnabarsana," is thickly plastered on the neoplasm and neighbourhood. When the paste is dry the little swellings are covered with collodion and the larger ones with adhesive plaster. This procedure is repeated each day for eight to fourteen days. At the same time ½ grm. of the silicium salt (which he calls "Nacasilicum") is given three times daily as a powder. The powder is well borne, the appetite increases. Also, after the cure the silicate is given for a period of a year at least. The paste in small tumours causes little or no pain, but in large ones acute pain may last for a day. After the disappearance of the swelling a sore with a dirty yellowish surface remains behind. By cleansing with benzene and daily application of salicylic and zinc ointment healing occurs very quickly, and all that remains is a beautiful smooth cicatrix.—*Deutsche tierarzt. Woch.*

A NEW BANDAGE IN SECTION AND RUPTURE OF THE FLEXOR TENDONS.

By BASS.

In section of the flexors one is not always successful in restoring the normal gait and avoiding the horse becoming barefooted by the use of plaster of Paris bandages and a gutta-percha splint. Bass had this defect in one subject on which he performed tenotomy. The horse suffered from dropping of the pedal bone on the opposite limb, and on this account supported itself badly on the operated limb. All bandages were useless until the following was applied: An iron splint was put on provided with an eye at the toe, and here a firm iron bar was affixed. It reached up to the fore-arm, and had a convexity in front of the fetlock. At the fore-arm there was a broad bow encircling a well-padded bamboo bandage which surrounded the fore-arm.

At the back side of the fetlock from the middle of the metacarpus to just above the foot a gutta-percha splint was put on. A linen bandage was put round the gutta-percha splint and iron support at the fetlock. Thus the fetlock was so strongly supported that it retained its normal position.

A similar bandage was employed with favourable results in paralysis of the radial nerve. Here a bamboo bandage reaching from the elbow to the fetlock was used after plentiful padding. By this means the knee was kept extended. The phalanges were kept rigid by an iron splint. This extended from an eye in the toe-piece to the metacarpal bone. It rested by a cross-bow against the bamboo bandage, and was bound to this. Finally a lace strap stretched from the bamboo bandage round the fore-arm to the hind ring of the slings. The horse could support itself on the paralyzed and rest the opposite one. The bamboo bandage is made of split bamboo canes. These are bound together with a strap in the form of a venetian blind. The bandage is applied to the limb after a solid padding with wadding. Although very light it is quite strong. In rupture of the flexors the bandage was only employed in order to avoid pressure from the iron splint over a large surface.

—*Deutsche tierärzt. Woch.*

Letters and Communications, &c.

Dr. Ireland; Mr. L. Edwards; Mr. J. A. Jordan; Professor Reynolds; Professor Antonini; Professor Liautard; Dr. A. Hughes; Mr. C. J. Davies; Mr. W. M. Scott; Mr. G. Mayall; Capt. Deacon; Mr. A. E. Willett; Mr. T. B. Goodall; Mr. J. F. D. Tutt; Capt. Pallin.

Books and Periodicals, &c., Received.

The American Veterinary Review; Journal of the Royal Army Medical Corps; Recueil de Médecine Vétérinaire; L'Hygiène de la Viande et du Lait; Revue Générale de Médecine Vétérinaire; Der Tierarzt; Zeitschrift für Veterinärkunde; Berliner tierärztliche Wochenschrift; Osterreichische Wochenschrift für Tierheilkunde; La Clinica Veterinaria; Revista de Medicina Veterinaria; Board of Agriculture and Fisheries; Department of Agriculture and Technical Instruction for Ireland; Kennel Gazette; Agricultural Journals for the Union of South Africa and for Rhodesia; American Journal of Veterinary Medicine.

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

Letters for the JOURNAL, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editors.

Manuscript—preferably type-written—should be on one side only of paper, marked with full name of author.

Illustrations for reproduction should be in good black or dark brown on white paper or card.

Advertisements and all business matters relating to the JOURNAL should be addressed to the publishers, Messrs. Baillière, Tindall and Cox.